Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION

Organized by
Serbian Ceramic Society
&
Institute of Technical Sciences of SASA

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
May 10-11th, 2012, Belgrade, Serbia

Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION: Program and the Book of Abstracts

Publisher:
Serbian Ceramic Society

Editors:
Prof. Dr. Vojislav Mitić
Dr. Nina Obradović
Dr. Lidija Mančić

Technical Editor:
Aleksandra Stojičić

Printing:
Serbian Academy of Sciences and Arts,
Knez Mihailova 35, Belgrade, Serbia
Format
Pop Lukina 15, Belgrade, Serbia

Edition:
70 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

SERBIAN Ceramic Society. Conference (1 ; 2012 ; Beograd)
Advanced Ceramics and Application : program and the book of abstracts / #[1st] #Serbian Ceramic Society Conference, May 10-11th, 2012, Belgrade, Serbia ; organized by Serbian Ceramic Society & Institute of Technical Science of SASA ; [editors Vojislav Mitić, Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2012 (Belgrade : Serbian Academy of Sciences and Arts). - XII, 37 str. ; 29 cm

Tiraž 70.

ISBN 978-86-915627-0-0
1. Srpsko keramičko društvo (Beograd)
a) Керамика - Апстракти b) Наука о материјалима - Апстракти c) Наноматеријали - Апстракти
COBISS.SR-ID 190546188

P04

Structural Changes, Dielectric and Ferroelectric Properties of Tribophysically Activated $BaTiO_3$

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In order to obtain nanocrystalline material which can be used in MLCC production, the investigations of the influence of $BaTiO_3$ powder tribophysical activation (TPA) on its structural changes, dielectric and ferroelectric properties have been performed. Microstructure development and crystal structure have been studied by mercury porosimetry method, SEM, EDS and X-ray powder diffraction analyses. The modifications of dielectric and ferroelectric properties of sintered samples have been examined and correlated with observed structural changes induced by TPA of starting powders. It has been found that dielectric and ferroelectric properties of tribophysically activated $BaTiO_3$ could be tuned by controlling the grain size and lattice strain of activated nanostructured material.

P05

Obtaining of Ceramic Materials by the Method of the Thermal Transformation of Cation Exchanged Zeolites

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The method of the thermal treatment of cation exchanged zeolites (ZTIT) is shown as very acceptable for synthesis of alkaline earth and alkaline framework aluminosilicates. In this work, are presented the results of the thermally induced phase transformation of Ba, K, Ag and Pb-exchanged LTA zeolites. The phase conversions in the temperature range from room temperature to 1300 ºC were investigated and followed by thermal (DTA/TGA), X-ray powder diffraction and SEM/EDAX analyses. Also, we investigated the XRD pattern line broadening and influence of the different cations to the microstructure parameters. The crystal structure and microstructural parameters were refined using Rietveld method. It is concluded that the type and valence state of the extraframework cations give rise to recrystallization of amorphous substances to the different framework topologies.
Keywords - Ceramics, ZTIT synthesis, X-ray powder diffraction, microstructure.